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# **CHAPTER NINE**

# **CONCLUSIONS AND**

# **RECOMMENDATIONS**

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## 9. CONCLUSIONS AND RECOMMENDATIONS

### 9.1. Conclusions

- The integrated feasibility report and EIS presents the findings of studies conducted for proposed improvements to the authorized Columbia and lower Willamette Rivers navigation channel in Oregon and Washington.
- The purposes of the proposed project are to improve the deep-draft transport of goods and to provide environmental restoration for fish and wildlife habitats. The need for navigation improvements has been driven by the steady growth in waterborne commerce and the use of larger, more efficient vessels to transport bulk commodities. Navigation limitations posed by the existing channel dimensions now occur with greater frequency.
- The report also includes documentation in support of EPA designation of new ocean disposal sites for maintenance of the Mouth of the Columbia River project, maintenance of the existing navigation channel, and construction/maintenance of proposed channel improvements.
- Planning constraints recognized that channel deepening alternatives were limited to a maximum of 3 feet by the study's authorizing legislation. Also, it was directed that the *Dredged Material Management Plan* (1998) would serve as the no action alternative for the study. This plan evaluated the most efficient way to maintain the authorized 40-foot navigation channel in the future.
- A range of alternatives was considered. Besides the no action alternative, a non-structural alternative to upgrade the existing river stage forecasting system to improve navigation was evaluated and will be fully implemented. Also, regional port concepts also were formulated to locate deep-draft facilities closer to the mouth of the Columbia River. These concepts, however, were dropped from further consideration because of the high costs associated with construction, transportation, port facility, and environmental needs.
- Three structural channel deepening alternatives were considered that alter the channel's configuration and/or depth by 41, 42, or 43 feet to improve deep-draft vessel transport. These alternatives would be similar and require dredging and disposal alternatives for construction and maintenance. Construction of the 41-, 42-, and 43-foot channels requires dredging 6, 12, and 20 million cubic yards of primarily sand from the channel, respectively.
- Construction of a deeper channel requires the removal of rock in the Columbia and Willamette Rivers. Mechanical methods such as a large clamshell dredge would be tried to see if the rock could be removed. Underwater blasting will be done in areas where mechanical methods are unsuccessful, and would result in short term adverse effects on aquatic organisms and wildlife. Excavated rock will be placed in upland disposal sites.

- Sediment in the Columbia River navigation channel is primarily sand with low a percent of organic content. This sediment would be suitable, based on EPA and Corps criteria, for unconfined in-water and upland disposal.
- The local sponsors for the proposed project have requested that dredging the Willamette River be delayed in order to allow coordination with the ODEQ investigation and remediation planning for the Portland Harbor. This will delay construction of the Willamette River portion to insure that final implementation decisions incorporate both the investigation results and remediation plan. Any deepening of the Willamette River channel will consider the remediation plan.
- Dredging of the Willamette River channel will require full compliance with all laws including the Clean Water Act, Endangered Species Act, and the National Environmental Policy Act. In addition, ODEQ will be asked to certify compliance with water quality standards for the Oregon portion of the project separately from certification of the Willamette River portion. Certification of the Willamette River portion will not occur until after the ODEQ remediation plan has been completed.
- Two disposal alternatives were considered in the study. The least cost disposal alternative would use a total of 30 upland disposal sites, with a total land area of 1,897 acres. Fifteen of these sites are included in the no action alternative. Eight upland sites have not been previously used for disposal and 23 were used in the past. The least cost disposal alternative results in the direct loss of about 285 acres of agricultural lands, 67 acres of riparian habitat, and 28 acres of wetland habitat.
- The sponsor's preferred disposal alternative is similar to the least cost disposal alternative, and was selected as the proposed disposal alternative in the final EIS. It would use a total of 29 upland disposal sites plus one gravel pit. The proposed disposal alternative would result in the direct loss of about 200 acres of agricultural lands, 67 acres of riparian habitat, and 20 acres of wetland habitat. Mitigation actions are recommended to offset these habitat losses.
- The channel deepening alternatives result in incrementally greater physical impacts with increasing depth. Maintenance dredging would shift dramatically from in-water to upland disposal. Dredging a deeper channel would lead to very slight increases in estuarine salinity under low river flow conditions. Estuarine circulation would essentially be unchanged. Overall sediment budget or sedimentation patterns would not change to any perceptible degree. Water quality impacts would increase in the short term from dredging a deeper channel. Long term water quality impacts may actually decrease as less material would be disposed of in in-water locations. Shoreline erosion from currents, wind waves, and ship wake is expected to remain near current levels.
- Three salinity workshops were held with state and federal resource agencies to determine the effects of channel deepening on salinity and estuarine organisms. It was concluded at the workshops that no significant biological impact would result from salinity changes predicted for the proposed channel deepening.

- Biological impacts from dredging a deeper channel would include impacting more benthic habitat. However, most of this habitat is at depths greater than 35 feet and is not considered highly productive. Reducing the amount of in-water disposal would result in less impact to aquatic organisms. Ocean disposal of dredged material would result in increased impacts to marine organisms. Based on studies evaluating the effects of current ocean disposal practices, these impacts are not expected to be significant. Increased use of upland disposal would result in additional impacts to wildlife habitat. A mitigation plan is proposed to offset any habitat losses.
- Twenty-two federally listed threatened and endangered wildlife species may occur in the study area. The proposed channel improvement project is not expected to adversely impact most of these species. For Columbian white-tailed deer, however, conservation measures are recommended to offset potential impacts to this species.
- Prior to 1999, the listed stocks of salmonids in the Columbia River included the Snake River fall and spring/summer runs of chinook, Snake River run of sockeye, and the upper and lower Columbia and Snake River runs of steelhead. In March 1999, the NMFS also listed chinook salmon as threatened in the lower Columbia River and upper Willamette River, and the spring run as endangered in the upper Columbia River. Columbia River chum salmon was listed as threatened. Middle Columbia and upper Willamette steelhead were listed as threatened. Proposed stocks include lower Columbia coho salmon and Columbia coastal cutthroat trout. The proposed stocks may be listed during the life of the proposed project. Deepening the navigation channel and related disposal actions would not be expected to have greater impacts to these salmonids than the existing maintenance dredging program.
- The deepening alternatives would result in minor impacts to aesthetics, recreation, and land use. Using more upland disposal would modify aesthetic values from primarily a rural farm condition to mounds of bare sand. Recreation impacts would result from increased upland disposal, adversely affecting activities such as wildlife viewing. Land use at new disposal sites would change from agricultural/open space to dredged material disposal. No cultural resources would be impacted by dredging or disposal actions.
- The channel deepening alternatives were found to have benefit-to-cost ratios above unity. Deepening the channel to 43-feet and using the least cost disposal plan was found to maximize net benefits. However, the sponsor's preferred disposal plan was selected for the proposed action since it would provide more beneficial use and have less wetland impacts. The fully funded cost estimate for the proposed action, including the environmental restoration component, is \$195,930,000.
- In conjunction with the proposed action, channel optimization measures were investigated to increase navigation safety or reduce the amount of construction and maintenance dredging. Turning basins, anchorages, and berthing areas were also analyzed in terms of adequacy of dimension and usefulness.

- An environmental restoration component resulted from a series of workshops with federal and state resource agencies and the public. Its scope consists of restoring the hydraulic connection between the Columbia River and Shillapoo Lake and fisheries habitat restoration measures. These elements were selected from a long list of potential actions as being the most appropriate to implement as a component of the proposed action.
- Based upon the evaluation of the criteria contained in 40 CFR Parts 220 through 228, the Corps and EPA have determined that the ocean dredged material disposal sites proposed in the DEIS (North Site, South Site, and Site E) and the Deep Water Site are suitable for designation and use as disposal sites for ocean dumping of dredged material when disposal and site management is performed in accordance with the management and monitoring plan which has been developed under 40 CFR 228.9 and use restrictions that will be specified as part of designation. The Corps and EPA have further determined that material dredged from the MCR, Columbia River channel and channel deepening (if authorized) projects meet the criteria for dredged material dumping. The North Site and South Site proposed in the DEIS are no longer under consideration for designation and use by the federal government. Site E and the Deep Water Site are proposed for designation by EPA through formal rulemaking, adopting the appropriate sections of this EIS and appendices to support that action. These two new ocean dredged material disposal sites will be used and managed in association with the existing North Jetty Site located adjacent to Site E but in jurisdictional Inland Waters rather than Ocean Waters. The four Columbia River ocean dredged material disposal sites originally designated by EPA in 1986 will be de-designated as part of the rulemaking package for the new sites. The sites selected by the Corps under their Section 103 authority in 1993 and 1997 will expire at the end of their authorized life or will be terminated once EPA's formal rulemaking is completed.

## **9.2. Recommendations**

I have given careful consideration to all significant aspects of this study in the overall public interest, including engineering and economic feasibility as well as social and environmental effects. The selected plan described in this integrated feasibility report and environmental impact statement provides the optimum solution for improvements to the authorized Columbia and lower Willamette Rivers navigation channel in Oregon and Washington.

I recommend that the authorized navigation channel for the Columbia and lower Willamette Rivers be modified to provide a 43-foot deep channel. The proposed disposal plan to be used for this structural alternative is the sponsor's preferred disposal plan. Disposal actions would occur in-water, at three beach nourishment locations, at new and previously used upland locations, and at a new Deep Water Site and existing Site E offshore in the ocean. The selected plan also includes an environmental restoration component to restore for fish and wildlife habitats along the lower Columbia River, especially for anadromous fish species. The fully funded cost estimate for the selected plan, including the environmental restoration component, is \$195,930,000.

The local sponsors for the proposed project, however, have requested that dredging the Willamette River be delayed to allow coordination with the Oregon Department of Environmental Quality's investigation and remediation planning for the Portland Harbor. This delays construction of the Willamette River portion of the selected plan to insure that final implementation decisions incorporate both the investigation results and remediation plan.


In addition, I recommend that the Port of Portland be authorized reimbursement for maintenance dredging of the project performed by the Port of Portland's pipeline dredge. The reimbursement to be afforded, subject to Government audit, will be based on the full operating cost of the Port of Portland's dredge while performing maintenance dredging of the project including proportionate cost of maintenance of the dredge based on the period of time the dredge is performing maintenance of the project.

I also recommend that the non-federal sponsor be authorized credit for participation in the construction of the project from river mile 95 to the upstream end of the project and improvement of embayment circulation portion of the ecosystem restoration features of the project. The credit to be afforded, subject to Federal Government audit, will be applied toward the non-federal sponsor cash contribution required for construction.

Lastly, I recommend that the Chief of Engineers be authorized to make lump sum payment to the Oregon Department of Fish and Wildlife and the Washington Department of Fish and Wildlife in fulfillment of the Federal Government's responsibility to operate and maintain these mitigation areas, subject to agreement by these agencies to accomplish the operation and maintenance of the mitigation areas without further cost to the Federal Government.

The recommendations contained herein reflect the information available at this time and current Departmental policies governing formulation of individual projects. They do not reflect program and budgeting priorities inherent in the formulation of national Civil Works Construction program nor the perspective of higher review levels within the Executive Branch. Consequently, the recommendations may be modified before they are transmitted to Congress as proposals for authorization and/or implementation of funding.

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ROBERT T. SLUSAR  
Colonel, EN  
Commanding